SEQUENCE LISTING

<110> Lee, Dean Y.
Park, Kye Won

<120> METHODS AND COMPOSITIONS FOR MANIPULATING THE GUIDED NAVIGATION OF PHYSIOLOGICAL TRACKING TUBULAR STRUCTURES

<130> 10402/23

<150> 60/392,142
<151> 2002-06-27

<160> 6

<170> PatentIn version 3.1

<210> 1
<211> 3742
<212> DNA
<213> Mouse

<400> 1
caaaagtgta tgggacaagg agaggagccg agagcagcca tgggctctgg aggaacgggc 60

ctcctgggga cggagtggcc tctgcctctg ctgctgcttt tcatcatggg aggtgaggct 120

ctggattctc caccccagat cctagttcac ccccaggacc agctacttca gggctctggc 180

ccagccaaga tgaggtgcag atcatccggc caaccacctc ccactatccg ctggctgctg 240

aatgggcagc ccctcagcat ggccacccca gacctacatt acctttgcc ggatgggacc 300

ctcctgttac atcggccctc tgtccaggga cggccacaag atgaccagaa catcctctca 360

gcaatcctgg gtgtctacac atgtgaggcc agcaaccggc tgggcacagc agtgagccgg 420

ggtgctaggc tgtctgtggc tgtcctccag gaggacttcc agatccaacc tcgggacaca 480

gtggccgtgg tgggagagag cttggttctt gagtgtggtc ctccctgggg ctacccaaaa 540

ccctcggtct catggtggaa agacgggaaa cccctggtcc tccagccagg gaggcgcaca 600

gtatctgggg attccctgat ggtgtcaaga gcagagaaga atgactcggg gacctatatg 660

tgtatggcca ccaacaatgc tgggcaacgg gagagccgag cagccagggt gtctatccag 720

gaatcccagg accacaagga acatctagag cttctggctg ttcgcattca gctggaaaat 780

gtgaccctgc taaaccccga acctgtaaaa ggtcccaagc ctgggccatc cgtgtggctc 840

agctggaagg tgagcggccc tgctgcacct gctgagtcat acacagctct gttcaggact 900

cagaggtccc ccagggacca aggatctcca tggacagagg tgctgctgcg tggcttgcag 960

agtgcaaagc ttgggggtct ccactggggc caagactatg aattcaaagt gagaccgtcc 1020

tccggccggg ctcgaggccc tgacagcaat gtgttgctcc tgaggctgcc tgaacaggtg 1080

cccagtgccc cacctcaagg agtgacctta agatctggca acggtagtgt ctttgtgagt 1140

tgggctccac cacctgctga aagccataat ggtgtcatcc gtggttacca ggtctggagc 1200

ctgggcaatg cctcattgcc tgctgccaac tggaccgtag tgggtgaaca gacccagctg 1260

gagatcgcca cacgactgcc aggctcctat tgtgtgcaag tggctgcagt cactggagct 1320

ggtgctggag aactcagtac ccctgtctgc ctccttttag agcaggccat ggagcaatca 1380

gcacgagacc ccaggaaaca tgttccctgg accctggaac agctgagggc caccttgaga 1440

cgaccagaag tcattgccag tagtgctgtc ctactctggt tgctgctact aggcattact 1500

gtgtgtatct acagacgacg caaagctggg gtgcacctgg gcccaggtct gtacagatac 1560

accagcgagg acgccattct aaaacacagg atggaccaca gtgactcccc atggctggca 1620

gacacctggc gttccacctc tggctctcga gacctgagca gcagcagcag ccttagtagt 1680

cggctgggat tggaccctcg ggacccacta gagggcaggc gctccttgat ctcctgggac 1740

cctcggagcc ccggtgtacc cctgcttcca gacacgagca cgttttacgg ctcccctcatt 1800

gcagagcagc cttccagccc tccagtccgg ccaagcccca agacaccagc tgctaggcgc 1860

tttccatcca agttggctgg aacctccagc ccctgggcta gctcagatag tctctgcagc 1920

cgcaggggac tctgttcccc acgcatgtct ctgaccccta cagaggcttg gaaggccaaa 1980

aagaagcagg aattgcacca agctaacagc tccccactgc tccggggcag ccaccccatg 2040

gaaatctggg cctgggagtt gggaagcaga gcctccaaga acctttctca aagcccaggt 2100

ccaaactctg gttccccagg agaagcgccc cgagccgtgg tatcctggcg tgctgtggga 2160

ccacaacttc accgcaactc cagtgagctg gcatctcgtc cactccctcc aacacccctt 2220

tctcttcgtg gagcttccag tcatgaccca cagagccagt gtgtggagaa gctccaagct 2280

ccctcctctg acccactgcc agcagcccct ctctccgtcc tcaactcttc cagaccttcc 2340

agcccccagg cctctttcct ctcctgtcct agcccatcct ccagcaacct gtccagctcc 2400

tcgctgtcat ccttagagga ggaggaggat caggacagcg tgctcacccc cgaggaggta 2460

gccctgtgtc tggagctcag tgatggggag gagacaccca cgaacagtgt atctcctatg 2520

ccaagagctc cttccccgcc aacaacctat ggctatatca gcataccaac ctgctcagga 2580

ctggcagaca tgggcagagc tggcgggggc gtggggtctg aggttgggaa cttactgtat 2640

ccacctcggc cctgccccac ccctacaccc agcgagggct ccctggccaa tggttggggc 2700

tcagcttctg aggacaatgt ccccagcgcc agggccagcc tggttagctc ttctgatggc 2760

tccttcctcg ctgatactca ctttgctcgt gccctggcag tggctgtgga tagctttggc 2820

ctcagtctgg atcccaggga agctgactgt gtcttcactg atgcctcatc acctccctcc 2880

cctcggggtg atctctccct gacccgaagc ttctctctgc ctttgtggga gtggaggcca 2940

gactggttgg aagatgctga gatcagccac acccagaggc tggggagggg gctgcctccc 3000

tggcctcctg attctagggc ctcttcccag cgaagttggc taactggtgc tgtgcccaag 3060

gctggtgatt cctcctgaat tgtccctgag aaggccagaa gagcacccag accactctcc 3120

tgtctgtccc ctggctttct cacatgtgga ggtcttggcc tatgcttctc tgtaatagaa 3180

gtccaccgtc actaggcttc tggagagctc tgtcattggg attgttaaaa taaatgaaag 3240

caaaccaaaa tatgatcacg ggagtcttgg attcccactg agaacaagac agcatcttca 3300

ggacagcaga ctctccacaa ccagaacctt tggcctaagt aagcctggct ccggagctcc 3360

cacctaagtg gatcatggaa agaagggaag ccaaccaggt cttcaggaag gacagaaatg 3420

ttttttggtg agggctatgg tggaggacct gtggaagagc cctctcatat ctacttggac 3480

tcctcccttа gaggccagct caacccttтc cccagtcaca ccatgcaagg aaactaaagg 3540

agaaaggtcg tggatgcagt gggccctata cagcgtcaca gtcaatgctt caaagtgaga 3600

tcaatggagg agactgaagg aaaggacgca gggaaacagg gaaccaatgc gctattctca 3660

ttctaccgcc actctgagct taaggaactt aattctataa aactgtaaag acgaaaaaaa 3720

aaaaaaaaaa aaaaaaaaaa aa 3742

<210> 2
<211> 3778
<212> DNA
<213> Homo sapiens

<400> 2
gctgagagta gccatgggct ctggaggaga cagcctcctg gggggcaggg gttccctgcc 60

tctgctgctc ctgctcatca tgggaggcat ggctcaggac tccccgcccc agatcctagt 120

ccacccccag gaccagctgt tccagggccc tggccctgcc aggatgagct gccaagcctc 180

aggccagcca cctcccacca tccgctggtt gctgaatggg cagcccctga gcatggtgcc 240

cccagaccca caccacctcc tgcctgatgg gacccttctg ctgctacagc cccctgcccg 300

gggacatgcc cacgatggcc aggccctgtc cacagacctg ggtgtctaca catgtgaggc 360

cagcaaccgg cttggcacgg cagtcagcag aggcgctcgg ctgtctgtgg ctgtcctccg 420

ggaggatttc cagatccagc ctcgggacat ggtggctgtg gtgggtgagc agtttactct 480

ggaatgtggg ccgccctggg gccacccaga gcccacagtc tcatggtgga aagatgggaa 540

acccctggcc ctccagcccg gaaggcacac agtgtccggg gggtccctgc tgatggcaag 600

agcagagaag agtgacgaag ggacctacat gtgtgtggcc accaacagcg caggacatag 660

ggagagccgc gcagcccggg tttccatcca ggagccccag gactacacgg agcctgtgga 720

gcttctggct gtgcgaattc agctggaaaa tgtgacactg ctgaacccgg atcctgcaga 780

gggccccaag cctagaccgg cggtgtggct cagctggaag gtcagtggcc ctgctgcgcc 840

tgcccaatct tacacggcct tgttcaggac ccagactgcc ccgggaggcc agggagctcc 900

gtgggcagag gagctgctgg ccggctggca gagcgcagag cttggaggcc tccactgggg 960

ccaagactac gagttcaaag tgagaccatc ctctggccgg gctcgaggcc ctgacagcaa 1020

cgtgctgctc ctgaggctgc cggaaaaagt gcccagtgcc ccacctcagg aagtgactct 1080

aaagcctggc aatggcactg tctttgtgag ctgggtccca ccacctgctg aaaaccacaa 1140

tggcatcatc cgtggctacc aggtctggag cctgggcaac acatcactgc caccagccaa 1200

ctggactgta gttggtgagc agacccagct ggaaatcgcc acccatatgc caggctccta 1260

ctgcgtgcaa gtggctgcag tcactggtgc tggagctggg gagcccagta gacctgtctg 1320

cctcctttta gagcaggcca tggagcgagc cacccaagaa cccagtgagc atggtccctg 1380

gaccctggag cagctgaggg ctaccttgaa gcggcctgag gtcattgcca cctgcggtgt 1440

tgcactctgg ctgctgcttc tgggcaccgc cgtgtgtatc caccgccggc gccgagctag 1500

ggtgcacctg ggcccaggtc tgtacagata taccagtgag gatgccatcc taaaacacag 1560

gatggatcac agtgactccc agtggttggc agacacttgg cgttccacct ctggctctcg 1620

ggacctgagc agcagcagca gcctcagcag tcggctgggg gcggatgccc gggacccact 1680

agactgtcgt cgctccttgc tctcctggga ctcccgaagc cccggcgtgc ccctgcttcc 1740

agacaccagc acttttatg gctccctcat cgctgagctg ccctccagta ccccagccag 1800

gccaagtccc caggtcccag ctgtcaggcg cctcccaccc cagctggccc agctctccag 1860

cccctgttcc agctcagaca gcctctgcag ccgcagggga ctctcttctc cccgcttgtc 1920

tctggcccct gcagaggctt ggaaggccaa aaagaagcag gagctgcagc atgccaacag 1980

ttccccactg ctccggggca gccactcctt ggagctccgg gcctgtgagt taggaaatag 2040

aggttccaag aacctttccc aaagcccagg agctgtgccc caagctctgg ttgcctggcg 2100

ggccctggga ccgaaactcc tcagctcctc aaatgagctg gttactcgtc atctccctcc 2160

agcacccctc tttcctcatg aaactccccc aactcagagt caacagaccc agcctccggt 2220

ggcaccacag gctccctcct ccatcctgct gccagcagcc cccatcccca tccttagccc 2280

ctgcagtccc cctagccccc aggcctcttc cctctctggc cccagcccag cttccagtcg 2340

cctgtccagc tcctcactgt catccctggg ggaggatcaa gacagcgtgc tgacccctga 2400

ggaggtagcc ctgtgcttgg aactcagtga gggtgaggag actcccagga acagcgtctc 2460

tcccatgcca agggctcctt cacccccac cacctatggg tacatcagcg tcccaacagc 2520

ctcagagttc acggacatgg gcaggactgg aggaggggtg gggcccaagg ggggagtctt 2580

gctgtgccca cctcggccct gcctcacccc cacccccagc gagggctcct tagccaatgg 2640

ttggggctca gcctctgagg acaatgccgc cagcgccaga gccagccttg tcagctcctc 2700

cgatggctcc ttcctcgctg atgctcactt tgcccgggcc ctggcagtgg ctgtggatag 2760

ctttggtttc ggtctagagc ccagggaggc agactgcgtc ttcatagatg cctcatcacc 2820

tccctcccca cgggatgaga tcttcctgac ccccaacctc tccctgcccc tgtgggagtg 2880

gaggccagac tggttggaag acatggaggt cagccacacc cagcggctgg gaaggggat 2940

gcctccctgg ccccctgact ctcagatctc ttcccagaga agtcagctcc actgtcgtat 3000

gcccaaggct ggtgcttctc ctgtagatta ctcctgaacc gtgtccctga gacttcccag 3060

acgggaatca gaaccacttc tcctgtccac ccacaagacc tgggctgtgg tgtgtgggtc 3120

ttggcctgtg tttctctgca gctggggtcc accttcccaa gcctccagag agttctccct 3180

ccacgattgt gaaaacaaat gaaaacaaaa ttagagcaaa gctgacctgg agccctcagg 3240

gagcaaaaca tcatctccac ctgactccta gccactgctt tctcctctgt gccatccact 3300

cccaccacca ggttgttttg gcctgaggag cagccctgcc tgctgctctt cccccaccat 3360

ttggatcaca ggaagtggag gagccagagg tgcctttgtg gaggacagca gtggctgctg 3420

ggagagggct gtggaggaag gagcttctcg gagcccctc tcagccttac ctgggcccct 3480

cctctagaga agagctcaac tctctcccaa cctcaccatg gaaagaaaat aattatgaat 3540

gccactgagg cactgaggcc ctacctcatg ccaaacaaag ggttcaaggc tgggtctagc 3600

gaggatgctg aaggaaggga ggtatgagac cgtaggtcaa aagcaccatc ctcgtactgt 3660

tgtcactatg agcttaagaa atttgatacc ataaaatggt aaagacttga aaaaaaaaaa 3720

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaa 3778

<210> 3
<211> 1012

<212> PRT
<213> Mouse

<400> 3

Met Gly Ser Gly Gly Thr Gly Leu Leu Gly Thr Glu Trp Pro Leu Pro
1 5 10 15

Leu Leu Leu Leu Phe Ile Met Gly Gly Glu Ala Leu Asp Ser Pro Pro
20 25 30

Gln Ile Leu Val His Pro Gln Asp Gln Leu Leu Gln Gly Ser Gly Pro
35 40 45

Ala Lys Met Arg Cys Arg Ser Ser Gly Gln Pro Pro Pro Thr Ile Arg
50 55 60

Trp Leu Leu Asn Gly Gln Pro Leu Ser Met Ala Thr Pro Asp Leu His
65 70 75 80

Tyr Leu Leu Pro Asp Gly Thr Leu Leu Leu His Arg Pro Ser Val Gln
85 90 95

Gly Arg Pro Gln Asp Asp Gln Asn Ile Leu Ser Ala Ile Leu Gly Val
100 105 110

Tyr Thr Cys Glu Ala Ser Asn Arg Leu Gly Thr Ala Val Ser Arg Gly
115 120 125

Ala Arg Leu Ser Val Ala Val Leu Gln Glu Asp Phe Gln Ile Gln Pro
130 135 140

Arg Asp Thr Val Ala Val Val Gly Glu Ser Leu Val Leu Glu Cys Gly
145 150 155 160

Pro Pro Trp Gly Tyr Pro Lys Pro Ser Val Ser Trp Trp Lys Asp Gly
165 170 175

Lys Pro Leu Val Leu Gln Pro Gly Arg Arg Thr Val Ser Gly Asp Ser
180 185 190

Leu Met Val Ser Arg Ala Glu Lys Asn Asp Ser Gly Thr Tyr Met Cys
195 200 205

Met Ala Thr Asn Asn Ala Gly Gln Arg Glu Ser Arg Ala Ala Arg Val
210 215 220

Ser Ile Gln Glu Ser Gln Asp His Lys Glu His Leu Glu Leu Leu Ala
225 230 235 240

Val Arg Ile Gln Leu Glu Asn Val Thr Leu Leu Asn Pro Glu Pro Val
245 250 255

Lys Gly Pro Lys Pro Gly Pro Ser Val Trp Leu Ser Trp Lys Val Ser
260 265 270

Gly Pro Ala Ala Pro Ala Glu Ser Tyr Thr Ala Leu Phe Arg Thr Gln
275 280 285

Arg Ser Pro Arg Asp Gln Gly Ser Pro Trp Thr Glu Val Leu Leu Arg
290 295 300

Gly Leu Gln Ser Ala Lys Leu Gly Gly Leu His Trp Gly Gln Asp Tyr
305 310 315 320

Glu Phe Lys Val Arg Pro Ser Ser Gly Arg Ala Arg Gly Pro Asp Ser
325 330 335

Asn Val Leu Leu Leu Arg Leu Pro Glu Gln Val Pro Ser Ala Pro Pro
340 345 350

Gln Gly Val Thr Leu Arg Ser Gly Asn Gly Ser Val Phe Val Ser Trp
355 360 365

Ala Pro Pro Pro Ala Glu Ser His Asn Gly Val Ile Arg Gly Tyr Gln
370 375 380

Val Trp Ser Leu Gly Asn Ala Ser Leu Pro Ala Ala Asn Trp Thr Val
385 390 395 400

Val Gly Glu Gln Thr Gln Leu Glu Ile Ala Thr Arg Leu Pro Gly Ser
405 410 415

Tyr Cys Val Gln Val Ala Ala Val Thr Gly Ala Gly Ala Gly Glu Leu
420 425 430

Ser Thr Pro Val Cys Leu Leu Leu Glu Gln Ala Met Glu Gln Ser Ala

435 440 445

Arg Asp Pro Arg Lys His Val Pro Trp Thr Leu Glu Gln Leu Arg Ala
450 455 460

Thr Leu Arg Arg Pro Glu Val Ile Ala Ser Ser Ala Val Leu Leu Trp
465 470 475 480

Leu Leu Leu Leu Gly Ile Thr Val Cys Ile Tyr Arg Arg Arg Lys Ala
485 490 495

Gly Val His Leu Gly Pro Gly Leu Tyr Arg Tyr Thr Ser Glu Asp Ala
500 505 510

Ile Leu Lys His Arg Met Asp His Ser Asp Ser Pro Trp Leu Ala Asp
515 520 525

Thr Trp Arg Ser Thr Ser Gly Ser Arg Asp Leu Ser Ser Ser Ser Ser
530 535 540

Leu Ser Ser Arg Leu Gly Leu Asp Pro Arg Asp Pro Leu Glu Gly Arg
545 550 555 560

Arg Ser Leu Ile Ser Trp Asp Pro Arg Ser Pro Gly Val Pro Leu Leu
565 570 575

Pro Asp Thr Ser Thr Phe Tyr Gly Ser Leu Ile Ala Glu Gln Pro Ser
580 585 590

Ser Pro Pro Val Arg Pro Ser Pro Lys Thr Pro Ala Ala Arg Arg Phe
595 600 605

Pro Ser Lys Leu Ala Gly Thr Ser Ser Pro Trp Ala Ser Ser Asp Ser
610 615 620

Leu Cys Ser Arg Arg Gly Leu Cys Ser Pro Arg Met Ser Leu Thr Pro
625 630 635 640

Thr Glu Ala Trp Lys Ala Lys Lys Lys Gln Glu Leu His Gln Ala Asn
645 650 655

Ser Ser Pro Leu Leu Arg Gly Ser His Pro Met Glu Ile Trp Ala Trp
660 665 670

```
Glu Leu Gly Ser Arg Ala Ser Lys Asn Leu Ser Gln Ser Pro Gly Pro
        675                 680                 685

Asn Ser Gly Ser Pro Gly Glu Ala Pro Arg Ala Val Val Ser Trp Arg
    690                 695                 700

Ala Val Gly Pro Gln Leu His Arg Asn Ser Ser Glu Leu Ala Ser Arg
705                 710                 715                 720

Pro Leu Pro Pro Thr Pro Leu Ser Leu Arg Gly Ala Ser Ser His Asp
                725                 730                 735

Pro Gln Ser Gln Cys Val Glu Lys Leu Gln Ala Pro Ser Ser Asp Pro
            740                 745                 750

Leu Pro Ala Ala Pro Leu Ser Val Leu Asn Ser Ser Arg Pro Ser Ser
        755                 760                 765

Pro Gln Ala Ser Phe Leu Ser Cys Pro Ser Pro Ser Ser Ser Asn Leu
    770                 775                 780

Ser Ser Ser Ser Leu Ser Ser Leu Glu Glu Glu Glu Asp Gln Asp Ser
785                 790                 795                 800

Val Leu Thr Pro Glu Glu Val Ala Leu Cys Leu Glu Leu Ser Asp Gly
                805                 810                 815

Glu Glu Thr Pro Thr Asn Ser Val Ser Pro Met Pro Arg Ala Pro Ser
            820                 825                 830

Pro Pro Thr Thr Tyr Gly Tyr Ile Ser Ile Pro Thr Cys Ser Gly Leu
        835                 840                 845

Ala Asp Met Gly Arg Ala Gly Gly Gly Val Gly Ser Glu Val Gly Asn
    850                 855                 860

Leu Leu Tyr Pro Pro Arg Pro Cys Pro Thr Pro Thr Pro Ser Glu Gly
865                 870                 875                 880

Ser Leu Ala Asn Gly Trp Gly Ser Ala Ser Glu Asp Asn Val Pro Ser
                885                 890                 895
```

Ala Arg Ala Ser Leu Val Ser Ser Ser Asp Gly Ser Phe Leu Ala Asp
900 905 910

Thr His Phe Ala Arg Ala Leu Ala Val Ala Val Asp Ser Phe Gly Leu
915 920 925

Ser Leu Asp Pro Arg Glu Ala Asp Cys Val Phe Thr Asp Ala Ser Ser
930 935 940

Pro Pro Ser Pro Arg Gly Asp Leu Ser Leu Thr Arg Ser Phe Ser Leu
945 950 955 960

Pro Leu Trp Glu Trp Arg Pro Asp Trp Leu Glu Asp Ala Glu Ile Ser
965 970 975

His Thr Gln Arg Leu Gly Arg Gly Leu Pro Pro Trp Pro Pro Asp Ser
980 985 990

Arg Ala Ser Ser Gln Arg Ser Trp Leu Thr Gly Ala Val Pro Lys Ala
995 1000 1005

Gly Asp Ser Ser
1010

<210> 4
<211> 1007
<212> PRT
<213> Homo sapiens

<400> 4

Met Gly Ser Gly Gly Asp Ser Leu Leu Gly Gly Arg Gly Ser Leu Pro
1 5 10 15

Leu Leu Leu Leu Leu Ile Met Gly Gly Met Ala Gln Asp Ser Pro Pro
20 25 30

Gln Ile Leu Val His Pro Gln Asp Gln Leu Phe Gln Gly Pro Gly Pro
35 40 45

Ala Arg Met Ser Cys Gln Ala Ser Gly Gln Pro Pro Pro Thr Ile Arg
50 55 60

Trp Leu Leu Asn Gly Gln Pro Leu Ser Met Val Pro Pro Asp Pro His

65 70 75 80

His Leu Leu Pro Asp Gly Thr Leu Leu Leu Leu Gln Pro Pro Ala Arg
85 90 95

Gly His Ala His Asp Gly Gln Ala Leu Ser Thr Asp Leu Gly Val Tyr
100 105 110

Thr Cys Glu Ala Ser Asn Arg Leu Gly Thr Ala Val Ser Arg Gly Ala
115 120 125

Arg Leu Ser Val Ala Val Leu Arg Glu Asp Phe Gln Ile Gln Pro Arg
130 135 140

Asp Met Val Ala Val Val Gly Glu Gln Phe Thr Leu Glu Cys Gly Pro
145 150 155 160

Pro Trp Gly His Pro Glu Pro Thr Val Ser Trp Trp Lys Asp Gly Lys
165 170 175

Pro Leu Ala Leu Gln Pro Gly Arg His Thr Val Ser Gly Gly Ser Leu
180 185 190

Leu Met Ala Arg Ala Glu Lys Ser Asp Glu Gly Thr Tyr Met Cys Val
195 200 205

Ala Thr Asn Ser Ala Gly His Arg Glu Ser Arg Ala Ala Arg Val Ser
210 215 220

Ile Gln Glu Pro Gln Asp Tyr Thr Glu Pro Val Glu Leu Leu Ala Val
225 230 235 240

Arg Ile Gln Leu Glu Asn Val Thr Leu Leu Asn Pro Asp Pro Ala Glu
245 250 255

Gly Pro Lys Pro Arg Pro Ala Val Trp Leu Ser Trp Lys Val Ser Gly
260 265 270

Pro Ala Ala Pro Ala Gln Ser Tyr Thr Ala Leu Phe Arg Thr Gln Thr
275 280 285

Ala Pro Gly Gly Gln Gly Ala Pro Trp Ala Glu Glu Leu Leu Ala Gly
290 295 300

```
Trp Gln Ser Ala Glu Leu Gly Gly Leu His Trp Gly Gln Asp Tyr Glu
305                 310                 315                 320

Phe Lys Val Arg Pro Ser Ser Gly Arg Ala Arg Gly Pro Asp Ser Asn
                325                 330                 335

Val Leu Leu Leu Arg Leu Pro Glu Lys Val Pro Ser Ala Pro Pro Gln
            340                 345                 350

Glu Val Thr Leu Lys Pro Gly Asn Gly Thr Val Phe Val Ser Trp Val
        355                 360                 365

Pro Pro Pro Ala Glu Asn His Asn Gly Ile Ile Arg Gly Tyr Gln Val
    370                 375                 380

Trp Ser Leu Gly Asn Thr Ser Leu Pro Pro Ala Asn Trp Thr Val Val
385                 390                 395                 400

Gly Glu Gln Thr Gln Leu Glu Ile Ala Thr His Met Pro Gly Ser Tyr
                405                 410                 415

Cys Val Gln Val Ala Ala Val Thr Gly Ala Gly Ala Gly Glu Pro Ser
            420                 425                 430

Arg Pro Val Cys Leu Leu Leu Glu Gln Ala Met Glu Arg Ala Thr Gln
        435                 440                 445

Glu Pro Ser Glu His Gly Pro Trp Thr Leu Glu Gln Leu Arg Ala Thr
    450                 455                 460

Leu Lys Arg Pro Glu Val Ile Ala Thr Cys Gly Val Ala Leu Trp Leu
465                 470                 475                 480

Leu Leu Leu Gly Thr Ala Val Cys Ile His Arg Arg Arg Arg Ala Arg
                485                 490                 495

Val His Leu Gly Pro Gly Leu Tyr Arg Tyr Thr Ser Glu Asp Ala Ile
            500                 505                 510

Leu Lys His Arg Met Asp His Ser Asp Ser Gln Trp Leu Ala Asp Thr
        515                 520                 525
```

```
Trp Arg Ser Thr Ser Gly Ser Arg Asp Leu Ser Ser Ser Ser Ser Leu
    530                 535                 540

Ser Ser Arg Leu Gly Ala Asp Ala Arg Asp Pro Leu Asp Cys Arg Arg
545                 550                 555                 560

Ser Leu Leu Ser Trp Asp Ser Arg Ser Pro Gly Val Pro Leu Leu Pro
                565                 570                 575

Asp Thr Ser Thr Phe Tyr Gly Ser Leu Ile Ala Glu Leu Pro Ser Ser
            580                 585                 590

Thr Pro Ala Arg Pro Ser Pro Gln Val Pro Ala Val Arg Arg Leu Pro
        595                 600                 605

Pro Gln Leu Ala Gln Leu Ser Ser Pro Cys Ser Ser Ser Asp Ser Leu
    610                 615                 620

Cys Ser Arg Arg Gly Leu Ser Ser Pro Arg Leu Ser Leu Ala Pro Ala
625                 630                 635                 640

Glu Ala Trp Lys Ala Lys Lys Lys Gln Glu Leu Gln His Ala Asn Ser
                645                 650                 655

Ser Pro Leu Leu Arg Gly Ser His Ser Leu Glu Leu Arg Ala Cys Glu
            660                 665                 670

Leu Gly Asn Arg Gly Ser Lys Asn Leu Ser Gln Ser Pro Gly Ala Val
        675                 680                 685

Pro Gln Ala Leu Val Ala Trp Arg Ala Leu Gly Pro Lys Leu Leu Ser
    690                 695                 700

Ser Ser Asn Glu Leu Val Thr Arg His Leu Pro Pro Ala Pro Leu Phe
705                 710                 715                 720

Pro His Glu Thr Pro Pro Thr Gln Ser Gln Gln Thr Gln Pro Pro Val
                725                 730                 735

Ala Pro Gln Ala Pro Ser Ser Ile Leu Leu Pro Ala Ala Pro Ile Pro
            740                 745                 750
```

Ile Leu Ser Pro Cys Ser Pro Pro Ser Pro Gln Ala Ser Ser Leu Ser
755 760 765

Gly Pro Ser Pro Ala Ser Ser Arg Leu Ser Ser Ser Ser Leu Ser Ser
770 775 780

Leu Gly Glu Asp Gln Asp Ser Val Leu Thr Pro Glu Glu Val Ala Leu
785 790 795 800

Cys Leu Glu Leu Ser Glu Gly Glu Glu Thr Pro Arg Asn Ser Val Ser
805 810 815

Pro Met Pro Arg Ala Pro Ser Pro Pro Thr Thr Tyr Gly Tyr Ile Ser
820 825 830

Val Pro Thr Ala Ser Glu Phe Thr Asp Met Gly Arg Thr Gly Gly Gly
835 840 845

Val Gly Pro Lys Gly Gly Val Leu Leu Cys Pro Pro Arg Pro Cys Leu
850 855 860

Thr Pro Thr Pro Ser Glu Gly Ser Leu Ala Asn Gly Trp Gly Ser Ala
865 870 875 880

Ser Glu Asp Asn Ala Ala Ser Ala Arg Ala Ser Leu Val Ser Ser Ser
885 890 895

Asp Gly Ser Phe Leu Ala Asp Ala His Phe Ala Arg Ala Leu Ala Val
900 905 910

Ala Val Asp Ser Phe Gly Phe Gly Leu Glu Pro Arg Glu Ala Asp Cys
915 920 925

Val Phe Ile Asp Ala Ser Ser Pro Pro Ser Pro Arg Asp Glu Ile Phe
930 935 940

Leu Thr Pro Asn Leu Ser Leu Pro Leu Trp Glu Trp Arg Pro Asp Trp
945 950 955 960

Leu Glu Asp Met Glu Val Ser His Thr Gln Arg Leu Gly Arg Gly Met
965 970 975

Pro Pro Trp Pro Pro Asp Ser Gln Ile Ser Ser Gln Arg Ser Gln Leu

980 985 990

His Cys Arg Met Pro Lys Ala Gly Ala Ser Pro Val Asp Tyr Ser
995 1000 1005

<210> 5
<211> 470
<212> PRT
<213> Mouse

<400> 5

Met Gly Ser Gly Gly Thr Gly Leu Leu Gly Thr Glu Trp Pro Leu Pro
1 5 10 15

Leu Leu Leu Leu Phe Ile Met Gly Gly Glu Ala Leu Asp Ser Pro Pro
20 25 30

Gln Ile Leu Val His Pro Gln Asp Gln Leu Leu Gln Gly Ser Gly Pro
35 40 45

Ala Lys Met Arg Cys Arg Ser Ser Gly Gln Pro Pro Pro Thr Ile Arg
50 55 60

Trp Leu Leu Asn Gly Gln Pro Leu Ser Met Ala Thr Pro Asp Leu His
65 70 75 80

Tyr Leu Leu Pro Asp Gly Thr Leu Leu Leu His Arg Pro Ser Val Gln
85 90 95

Gly Arg Pro Gln Asp Asp Gln Asn Ile Leu Ser Ala Ile Leu Gly Val
100 105 110

Tyr Thr Cys Glu Ala Ser Asn Arg Leu Gly Thr Ala Val Ser Arg Gly
115 120 125

Ala Arg Leu Ser Val Ala Val Leu Gln Glu Asp Phe Gln Ile Gln Pro
130 135 140

Arg Asp Thr Val Ala Val Val Gly Glu Ser Leu Val Leu Glu Cys Gly
145 150 155 160

Pro Pro Trp Gly Tyr Pro Lys Pro Ser Val Ser Trp Trp Lys Asp Gly
165 170 175

```
Lys Pro Leu Val Leu Gln Pro Gly Arg Arg Thr Val Ser Gly Asp Ser
            180                 185                 190

Leu Met Val Ser Arg Ala Glu Lys Asn Asp Ser Gly Thr Tyr Met Cys
        195                 200                 205

Met Ala Thr Asn Asn Ala Gly Gln Arg Glu Ser Arg Ala Ala Arg Val
    210                 215                 220

Ser Ile Gln Glu Ser Gln Asp His Lys Glu His Leu Glu Leu Leu Ala
225                 230                 235                 240

Val Arg Ile Gln Leu Glu Asn Val Thr Leu Leu Asn Pro Glu Pro Val
                245                 250                 255

Lys Gly Pro Lys Pro Gly Pro Ser Val Trp Leu Ser Trp Lys Val Ser
            260                 265                 270

Gly Pro Ala Ala Pro Ala Glu Ser Tyr Thr Ala Leu Phe Arg Thr Gln
        275                 280                 285

Arg Ser Pro Arg Asp Gln Gly Ser Pro Trp Thr Glu Val Leu Leu Arg
    290                 295                 300

Gly Leu Gln Ser Ala Lys Leu Gly Gly Leu His Trp Gly Gln Asp Tyr
305                 310                 315                 320

Glu Phe Lys Val Arg Pro Ser Ser Gly Arg Ala Arg Gly Pro Asp Ser
                325                 330                 335

Asn Val Leu Leu Leu Arg Leu Pro Glu Gln Val Pro Ser Ala Pro Pro
            340                 345                 350

Gln Gly Val Thr Leu Arg Ser Gly Asn Gly Ser Val Phe Val Ser Trp
        355                 360                 365

Ala Pro Pro Pro Ala Glu Ser His Asn Gly Val Ile Arg Gly Tyr Gln
    370                 375                 380

Val Trp Ser Leu Gly Asn Ala Ser Leu Pro Ala Ala Asn Trp Thr Val
385                 390                 395                 400
```

Val Gly Glu Gln Thr Gln Leu Glu Ile Ala Thr Arg Leu Pro Gly Ser
405 410 415

Tyr Cys Val Gln Val Ala Ala Val Thr Gly Ala Gly Ala Gly Glu Leu
420 425 430

Ser Thr Pro Val Cys Leu Leu Leu Glu Gln Ala Met Glu Gln Ser Ala
435 440 445

Arg Asp Pro Arg Lys His Val Pro Trp Thr Leu Glu Gln Leu Arg Ala
450 455 460

Thr Leu Arg Arg Pro Glu
465 470

<210> 6
<211> 469
<212> PRT
<213> Homo sapiens

<400> 6

Met Gly Ser Gly Gly Asp Ser Leu Leu Gly Gly Arg Gly Ser Leu Pro
1 5 10 15

Leu Leu Leu Leu Leu Ile Met Gly Gly Met Ala Gln Asp Ser Pro Pro
20 25 30

Gln Ile Leu Val His Pro Gln Asp Gln Leu Phe Gln Gly Pro Gly Pro
35 40 45

Ala Arg Met Ser Cys Gln Ala Ser Gly Gln Pro Pro Pro Thr Ile Arg
50 55 60

Trp Leu Leu Asn Gly Gln Pro Leu Ser Met Val Pro Pro Asp Pro His
65 70 75 80

His Leu Leu Pro Asp Gly Thr Leu Leu Leu Leu Gln Pro Pro Ala Arg
85 90 95

Gly His Ala His Asp Gly Gln Ala Leu Ser Thr Asp Leu Gly Val Tyr
100 105 110

Thr Cys Glu Ala Ser Asn Arg Leu Gly Thr Ala Val Ser Arg Gly Ala
115 120 125

Arg Leu Ser Val Ala Val Leu Arg Glu Asp Phe Gln Ile Gln Pro Arg
130 135 140

Asp Met Val Ala Val Val Gly Glu Gln Phe Thr Leu Glu Cys Gly Pro
145 150 155 160

Pro Trp Gly His Pro Glu Pro Thr Val Ser Trp Trp Lys Asp Gly Lys
165 170 175

Pro Leu Ala Leu Gln Pro Gly Arg His Thr Val Ser Gly Gly Ser Leu
180 185 190

Leu Met Ala Arg Ala Glu Lys Ser Asp Glu Gly Thr Tyr Met Cys Val
195 200 205

Ala Thr Asn Ser Ala Gly His Arg Glu Ser Arg Ala Ala Arg Val Ser
210 215 220

Ile Gln Glu Pro Gln Asp Tyr Thr Glu Pro Val Glu Leu Leu Ala Val
225 230 235 240

Arg Ile Gln Leu Glu Asn Val Thr Leu Leu Asn Pro Asp Pro Ala Glu
245 250 255

Gly Pro Lys Pro Arg Pro Ala Val Trp Leu Ser Trp Lys Val Ser Gly
260 265 270

Pro Ala Ala Pro Ala Gln Ser Tyr Thr Ala Leu Phe Arg Thr Gln Thr
275 280 285

Ala Pro Gly Gly Gln Gly Ala Pro Trp Ala Glu Glu Leu Leu Ala Gly
290 295 300

Trp Gln Ser Ala Glu Leu Gly Gly Leu His Trp Gly Gln Asp Tyr Glu
305 310 315 320

Phe Lys Val Arg Pro Ser Ser Gly Arg Ala Arg Gly Pro Asp Ser Asn
325 330 335

Val Leu Leu Leu Arg Leu Pro Glu Lys Val Pro Ser Ala Pro Pro Gln
340 345 350

```
Glu Val Thr Leu Lys Pro Gly Asn Gly Thr Val Phe Val Ser Trp Val
        355                 360                 365

Pro Pro Pro Ala Glu Asn His Asn Gly Ile Ile Arg Gly Tyr Gln Val
    370                 375                 380

Trp Ser Leu Gly Asn Thr Ser Leu Pro Pro Ala Asn Trp Thr Val Val
385                 390                 395                 400

Gly Glu Gln Thr Gln Leu Glu Ile Ala Thr His Met Pro Gly Ser Tyr
                405                 410                 415

Cys Val Gln Val Ala Ala Val Thr Gly Ala Gly Ala Gly Glu Pro Ser
            420                 425                 430

Arg Pro Val Cys Leu Leu Leu Glu Gln Ala Met Glu Arg Ala Thr Gln
        435                 440                 445

Glu Pro Ser Glu His Gly Pro Trp Thr Leu Glu Gln Leu Arg Ala Thr
    450                 455                 460

Leu Lys Arg Pro Glu
465
```